


LOAD-BEARING PRECAST FOAMED CONCRETE SANDWICH WALL

LOAD-BEARING PRECAST FOAMED CONCRETE SANDWICH WALL

*Noridah Mohamad
Abdul Aziz Abdul Samad
Jayaprakash Jaganathan*


Penerbit
UTHM
2018

© Penerbit UTHM
First Published 2018

Copyright reserved. Reproduction of any articles, illustrations and content of this book in any form be it electronic, mechanical photocopy, recording or any other form without any prior written permission from The Publisher's Office of Universiti Tun Hussein Onn Malaysia, Parit Raja, Batu Pahat, Johor is prohibited. Any negotiations are subjected to calculations of royalty and honorarium.

Perpustakaan Negara Malaysia Cataloguing—in—Publication Data

Noridah Mohamad

LOAD-BEARING PRECAST FOAMED CONCRETE SANDWICH WALL / Noridah Mohamad, Abdul Aziz Abdul Samad, Jayaprakash Jaganathan.

ISBN 978-967-2183-50-1

1. Concrete walls. 2. Government publications--Malaysia.

I. Abdul Aziz Abdul Samad. II. Jaganathan Jaganaesan.

III. Title.

627

Published by:
Penerbit UTHM
Universiti Tun Hussein Onn Malaysia
86400 Parit Raja,
Batu Pahat, Johor
Tel: 07-453 7051 / 7454
Fax: 07-453 6145

Website: <http://penerbit.uthm.edu.my>
E-mail: pt@uthm.edu.my
<http://e-bookstore.uthm.edu.my>

Penerbit UTHM is a member of
Majlis Penerbitan Ilmiah Malaysia
(MAPIM)

Printed by:
Percetakan Impian Sdn Bhd
No. 67, Jalan Bukit 9,
Kawasan perindustrian MIEL,
Bandar Seri Alam,
81750 Masai,
Johor.

TABLE *of* CONTENTS

Preface	xi
List of Abbreviations	xv

CHAPTER 1 PRECAST CONCRETE

1.1	Precast Concrete System	1
1.2	Precast Sandwich Panel	5
1.2.1	Materials for precast sandwich panel	5
	1.2.1.1 Materials used as the wythe	6
	1.2.1.2 Materials used as the core	8
1.2.2	Connection system in Precast Sandwich Panel	9
1.2.3	Various applications of Precast Sandwich Panel	12
1.3	Lightweight Foamed Concrete	13
1.4	Precast Lightweight Foamed Concrete Sandwich Panel (PLFP)	15
1.5	Summary	17

CHAPTER 2 FABRICATION OF PRECAST LIGHTWEIGHT FOAMED CONCRETE SANDWICH PANEL (PLFP)

2.1	Introduction	19
2.2	Materials	21
2.2.1	Foam Concrete Mixture	24
2.2.1.1	Mixture Ratio of the Materials	24
2.2.1.2	Foam Concrete Mixing Process	24
2.3	Pilot Test	26
2.3.1	Trial Mixture	26
2.3.2	Material Properties	27
2.3.3	Dimension and Details of PLFP Specimens	28
2.3.4	Fabrication of PLFP Panel	28
2.3.5	Test Procedure	30
2.3.6	Results from Pilot Test	32
2.3.6.1	Material Properties	32
2.3.6.2	Structural Behavior of PLFP Specimens	33
	a) Ultimate Load	33
	b) Failure Mode and Crack Pattern	34
	c) Load-deflection Profiles	34
2.3.7	Discussion	35
2.4	Actual Experimental Programme	36
2.4.1	Fabrications of PLFP Panel	38
2.4.2	Details and Dimension of PLFP Panel	42
2.4.3	Test Procedure	43
2.4.4	Experimental Results	43
2.4.4.1	Material Properties	43
2.4.4.2	Ultimate Load	43
2.4.4.3	Crack Pattern and Failure Mode	45
2.5	Summary	46